#0840

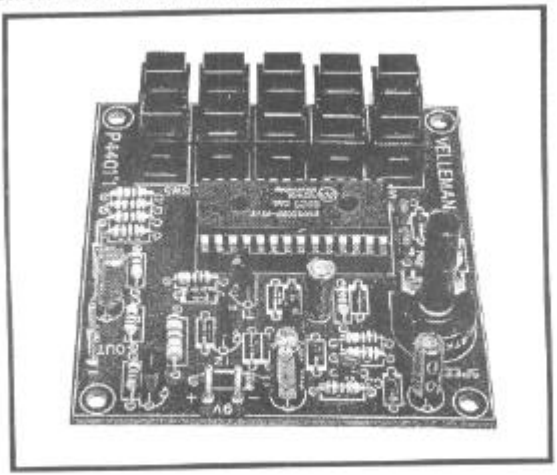
velleman-kit HIGH-Q

Skill level : 1

SOUND GENERATOR

K4401

- 10 different sounds :
  sirenes, machine gun, mortar, car engine, ...
- Adjustable sound speed
- Push-button keyboard
- Loudspeaker output : 8 ohm / 1W
- Line output : 1 Vrms
- Power supply : 9 V battery
- Dimensions : 75 x 75 mm (2.95" x 2.95")



SOUNDS GENERATOR ASSEMBLY AND TOOLS

Check that you have all the parts.

RECOMMENDED TOOLS

Miniature 25W soldering iron
Multicore solder
Soldering iron stand and sponge

ASSEMBLY

1. RESISTORS

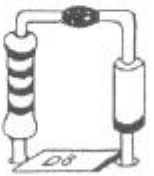
Resistors are not polarized, so they can be inserted in either direction. Only the three primary color bands are mentioned. There may be a fourth band which can be ignored.

Inventory	Sequence of assembly	Reference	Part number / description
○	○	R1	4K7 (yellow, violet, red)
○	○	R2	330 ohm (orange, orange, brown)
○	○	R3	2M2 (red, red, green)
○	○	R4	2K2 (red, red, red)
○	○	R5	10M (brown, black, blue)
○	○	R6	27 ohm 1/2W (red, violet, black)
○	○	R7	470 ohm (yellow, violet, brown)
○	○	R8	1K (brown, black, red)
○	○	R9 to R14	10K (brown, black, orange)
○	○	R15	3K3 (orange, orange, red)

2. DIODES

Align the banded end with the band drawn on the PCB board. (Pay attention to the polarity!)

Note : Mount a 470ohm resistor (yellow, violet, brown) in series with D8 (see figure)



Inventory	Sequence of assembly	Reference	Part number / description
○	○	D1 to D9	Small signal diodes from the 1N4148 series.
○	○	D10	Diode from the 1N4000 series.
○	○	ZD1	5.6V zener diode.

3. SOCKET

Inventory	Sequence of assembly	Part number / description
○	○	Fit the IC-socket for IC1

4. PCB-pins

Inventory	Sequence of assembly	Part number / description
○ -	○	Fit the PCB-pins for OUT, LS, 9V + and -

5. TRANSISTORS AND FETS

The transistor has a flat side and rounded side. The flat side faces the same direction as the flat side drawn on the PCB board.

Inventory	Sequence of assembly	Reference	Part number / description
○	○	T1 to T3	BC557 type or equivalent
○	○	T4	517 type or equivalent

6. CAPACITORS

These capacitors are not polarized, so they can be inserted either way.

Inventory	Sequence of assembly	Reference	Part number / description
○	○	C1	22pF ceramic capacitor
○	○	C2 to C4	100nF (Sometimes labelled as 104)

7. THE ELECTROLYTIC CAPACITORS

Note carefully the positive leads before you fit the capacitor into the PCB board.
Pay attention to the polarity !

Inventory	Sequence of assembly	Reference	Part number / description
○	○	C5	1µF elco Pay attention to the polarity !
○	○	C6 and C7	47µF elco
○	○	C8	100µF elco

8. TRIMMERS

Inventory	Sequence of assembly	Reference	Part number / description
○	○	RV1	47K trimmer potentiometer

9. POTENTIOMETER SHAFT

Inventory	Sequence of assembly	Part number / description
○	○	Fit the potentiometer shaft.

10. TRIMMERS

Inventory	Sequence of assembly	Reference	Part number / description
○	○	SW1 to SW10	Push buttons

13. INTEGRATED CIRCUIT (IC)

Inventory	Sequence of assembly	Reference	Part number / description
○	○	IC	Insert the VK4401 type IC into its socketw with the notch pointing in the same direction as the outline on the PCB

○ Turn the potentiometer to its center position.

○ Connect a loudspeaker (8 ohm / 1Watt min.) to the points LS.

❍ Connect a power supply (9VDC) or a 9V battery to +V and -V.

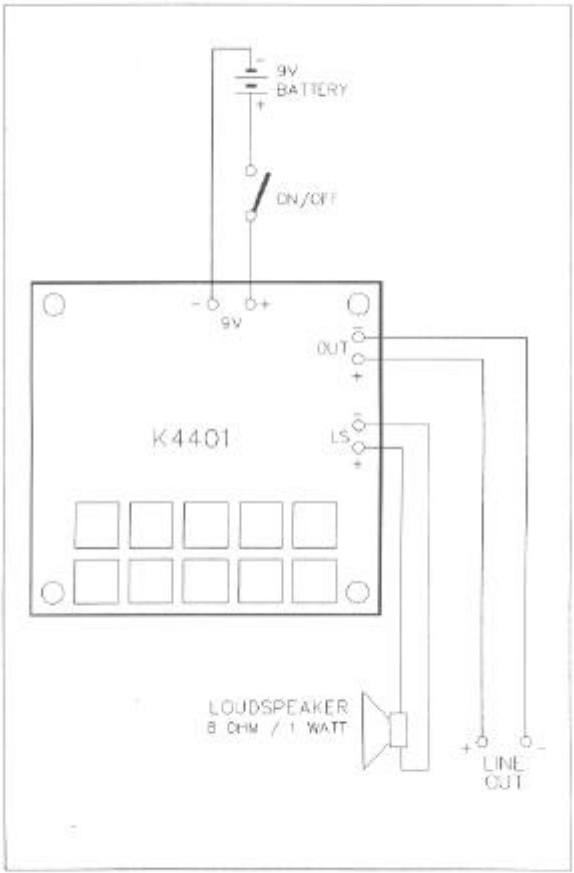
Pressing the different push buttons now causes the respective effects to be produced.

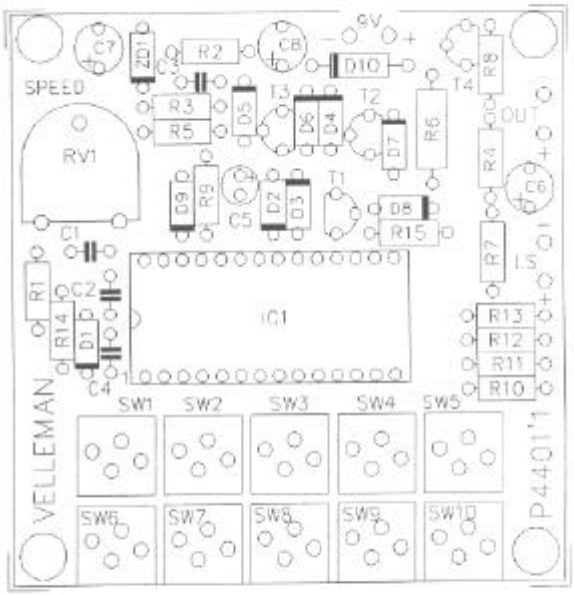
ATTENTION: With some of the effects (e.g. sirens, car engine) it's necessary to keep the push button pressed.

The speed of the effects can be altered by turning the potentiometer.

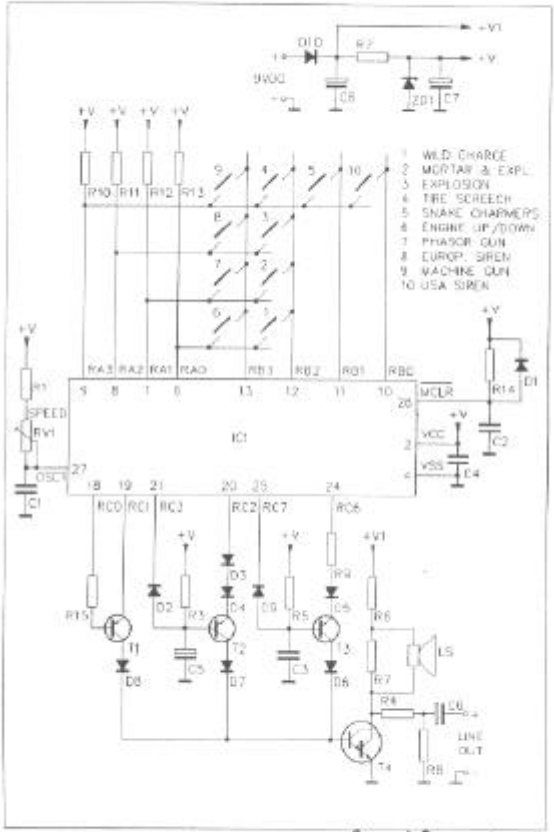
The OUT output allows you to further amplify the sounds or to connect them to a mixing panel, in which case you may disconnect the loudspeaker.

Because all the push buttons and the potentiometer face the same way, this circuit can easily be built into a plastic housing or the PCB can be mounted behind a panel.


9V
BATTERY
ON/OFF
9V
OUT
K4401
LS
LOUDSPEAKER
8 OHM / 1 WATT
LINE
OUT



Sound generator
PCB layout and
Components placement



Sound Generator
Schematics